

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau

(43) International Publication Date
11 December 2003 (11.12.2003)

PCT

(10) International Publication Number
WO 2003/103071 A3

(51) International Patent Classification⁷: H02J 7/00, (74) Agent: MOXON, George, W., III; Roetzel & Andress, G01N 27/42, 27/416 222 South Main Street, Akron, OH 44308 (US).

(21) International Application Number: PCT/US2003/017028 (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(22) International Filing Date: 30 May 2003 (30.05.2003) (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(25) Filing Language: English (26) Publication Language: English

(30) Priority Data: 60/385,527 4 June 2002 (04.06.2002) US

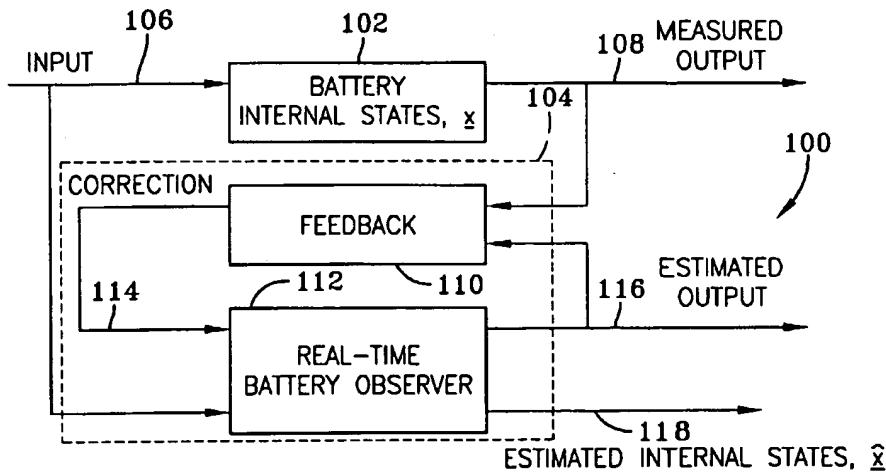
(71) Applicant (*for all designated States except US*): UNIVERSITY OF AKRON [US/US]; 302 Buchtel Commons, Akron, OH 44325 (US).

(71) Applicants and (72) Inventors: HARTLEY, Tom [US/US]; 3649 Mogadore Rd., Mogadore, OH 44260 (US). LORENZO, Carl [US/US]; 3275 W. 157th Street, Cleveland, OH 44111 (US).

Published: — with international search report

[Continued on next page]

(54) Title: OPTIMAL BATTERY CHARGING FOR DAMAGE MITIGATION



(57) Abstract: A system and method for charging and thus extending the life of an electrical storage device is disclosed. The system provides for developing an essentialized cell model structure of the electrical storage device; determining model parameters for charge-discharge data of the structure; and determining charge-discharge behavior of the structure in a voltage-charge plane. The method also includes measuring voltage values of the structure based upon the charge-discharge behavior; and deriving an instantaneous damage rate from the measured voltage values. The method further includes developing a charging profile based upon the instantaneous damage rate, wherein the charging profile optimizes a charging current with respect to the damage per cycle so as to extend the overall life of the electrical storage device. The method also includes the ability of the system to track the parameters of the electrical storage device as the device changes with time.

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